



The
Connections for Sustainability

Green Craft Challenge

Green craft challenge

By Jaclin DuRant, Livability Educator





Green Craft Challenge

GREEN CRAFT CHALLENGE

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Crafting for Waste Reduction



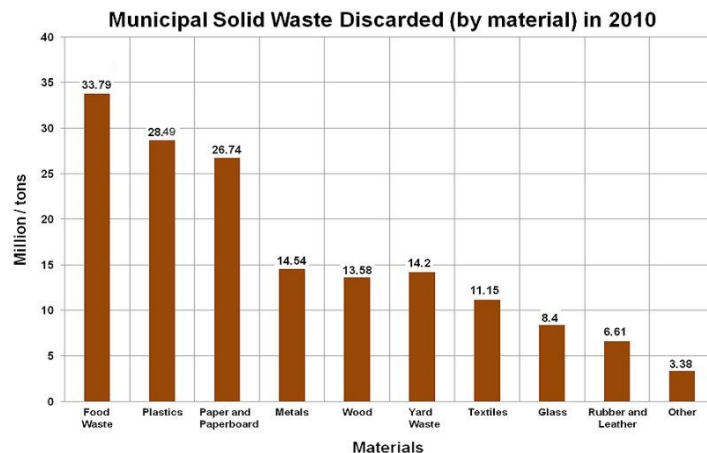
The EPA estimates that in 2010, Americans threw away 250 million tons of garbage, known as municipal solid waste (MSW). This averages out to a little over 4 pounds per person every day. All of this trash is either burned or sent to a landfill. Some MSW, such as metal, yard waste, and tires, are recovered before they go into the landfill, but over half of our garbage is buried in these very expensive and highly engineered dump sites.

A landfill isn't just a hole in the ground, and contrary to popular belief, trash thrown into a landfill does not biodegrade. A landfill is engineered to reduce air and water infiltration, both of which are needed by

microbes that break down organic materials. Archeologists from the Garbage Project at the University of Arizona have excavated 40 year old newspapers that were still legible from landfills as well as food waste, such as heads of lettuce that were still whole.

One surprising thing about the amount of MSW that Americans create is that much, if not most, of it could be recovered in one form or another. Researchers from the Garbage Project found that almost half of the garbage in landfills consisted of paper. The EPA reports that in 2010, 33 million tons of food waste and 14 million tons of yard waste were thrown away. Food and yard waste can be composted. Paper, glass, metal, and many plastics can be recycled, but these items still find their ways into our landfills.

To further complicate the issue, not all trash makes it to the landfill. All too often,



US EPA. 2012. <http://www.epa.gov/waste/conserve/materials/organics/food/fd-basic.htm>

trash is left on the ground. Toxic breakdown products pollute soil and water, and streams and rivers carry trash out to the ocean. Scientists estimate that as much as 80% of the trash in the ocean comes from land. Most of that trash is plastic, and it may kill as many as one million seabirds and one hundred thousand marine mammals every year.

Waste is both an environmental and a social problem, and it is a problem that should be tackled through education. Too many people don't think twice about throwing something away. For many young people, "away" is a magical place where trash goes, and the reality of what happens to their garbage is either abstract or unknown.

The goal of the Green Craft Challenge is to engage students in contemplation of where their trash goes once it is thrown "away" and to encourage waste reduction through reuse and recycling. Using trash items for crafts helps out on both ends of the waste cycle; by keeping items out of the land fill and through source reduction by

reducing purchase of new items. Crafts also encourage creativity and hands on learning, and are a great avenue for engaging students of all ages.

Our garbage problem is not going to go away, but we can address these issues in fun activities that encourage students to problem solve.

About the Green Craft Challenge

During the Summer of 2012, A.J. Whittenberg Librarian, Amanda Leblanc, and City of Greenville's Livability Educator, Jaclin DuRant, teamed up to offer a Green Craft to students during open library time at the school once a week. Jaclin also included crafts with recycled items in many of her programs offered at City Community Centers. More students were becoming involved in the discussion about waste, but a lot of folks were left out of the fun.

An A. J. Whittenberg student asked Mrs. Leblanc to provide video tutorials for the crafts so that students who couldn't come to the library could follow along at home. Thus,



Crafting with "Trash"

Greenville's Livability Educator infuses "green" crafts into a variety of programs at Community Centers and Schools across the City.

the "Green Craft Challenge" was born.

This booklet offers a set of crafts that can be done with recycled materials. In addition to the craft tutorials, this booklet encourages discussion about MSW and problem solving.

Each section in this booklet includes background information as a talking point on an issue related to MSW or waste reduction, a materials list, a step by step tutorial for creating one or more crafts, and a challenge section designed to encourage students to think out of the box.

Can you step up to the Challenge and reduce your impact on the waste stream?

So Much Paper Waste!



Archeologists from the Garbage Project at the University of Arizona sorted through the contents of 15 landfills across North America. Overwhelmingly, they discovered that the most abundant item (by volume) thrown in the trash is paper. The US EPA states that 29% of the waste that Americans throw into landfills is paper.

Paper of all sorts can be recycled. Mail, cardboard, newspaper, construction paper, and even phonebooks are accepted by most curbside recycling programs.

Paper that can't be placed in the curbside bins (hardback books) often can be dropped off at select locations (such as Greenville's Stone Avenue Recycling

Center) for reuse or to be recycled.

Recycling paper doesn't just reduce the amount of waste entering landfills, but helps conserve and protect natural resources and reduces greenhouse gas emissions.

Toilet paper and paper towel rolls can be recycled or composted, but let's make sure they don't go in the trash can!

MATERIALS NEEDED:

Toilet paper rolls

*or Paper towel rolls

Scissors

Glue

Paint

Toilet Paper Roll Flowers

An extremely simple craft that can equal hours of fun!

1. **Use scissors to cut toilet paper or paper towel rolls into sections.**

The sections do not have to be any specific size, but try to cut the pieces so that they are similar in size.

2. **Arrange the pieces so that they form the shape you want.**

For a flower with five petals, take each piece and flatten it out slightly, creasing the edges to create the petal shapes.

3. **Glue the pieces together.**

Carefully spread craft glue onto the places where two petals meet, and press them together. Set the glued flower

aside and wait for it to dry before finishing.



4. **Paint the flowers.** Finish the craft by painting your finished flower a bright color.

For more fun, make a few different types of flowers, and arrange them on a painted piece of cardboard or in the top of a recycled egg carton to create a toilet paper roll "garden."



Finished
Paper Roll
Flower

Toilet Paper Roll Butterfly



**Finished
Butterfly**

Creating a toilet paper roll butterfly is almost the same as creating a flower. Cut the pieces and arrange them so that one piece in the middle will form the butterfly's body and two pieces on either side will form the wings.

To make the antenna, cut one thin section of toilet paper roll, and then cut it in half to form one long strip. Bend the strip so that it is shaped like a "V."

Cut a slit in the top of the body section of the toilet

paper roll and slide the pointed part of the "V" into the gap. Position the antenna however you like and then glue the whole thing together.

Once the glue is dry, paint the butterfly bright colors with contrasting colors on the wings. The finished butterfly would fit in well with a toilet paper roll flower "garden."

*This craft would also fit in well with a discussion about insects and pollinators.

***What other
animals can you
make out of
toilet paper roll
pieces?***



Challenge

How many shapes can you make?

The oval pieces used to make flower petals and butterfly wings are super simple to make. Just gently squeeze a section of roll and an oval forms. Crease the end and "voila!" you have petals.

What would happen if you then squeezed the section of roll again and creased the new edges? You would have

a diamond or a square!

How many different shapes can you make out of a single tube of toilet paper?

After making some different shapes, try painting each piece a different color before gluing them together. Then, arrange the shapes to make a unique abstract art sculpture.





Shop smart: Source Reduction can mean choosing **NOT** to buy or to buy **LESS**

MATERIALS NEEDED:

Clean Glass Jar(s)

White glue

Water

Scraps of tissue paper

Foam brush

**“Stained”
Glass Jar
with a
candle
inside**



Reduce: What does it mean?

Reduce, reuse, recycle. Everyone knows the words, but it is important to think about what they mean to our lives in order to make an impact on the waste cycle.

The definition of reduce is “to bring down to a smaller amount or size.”

So, the reduce part of “reduce, reuse, recycle” means that we need to create less waste in the first place.

The first logical step is “source reduction.”

Source reduction is a fancy way of saying “throw less stuff in the trash.” This can be accomplished in many different ways. One

method of source reduction is in the design and manufacturing section of the supply chain. By making a product in a way that is more efficient or by packaging it in less materials, we reduce waste at the source.

Another aspect of source reduction lies with the consumer, and that is choice. You can choose NOT to buy something, or to buy a comparable product that generates less waste, such as a recyclable paper cup or reusable glass cup instead of a foam cup.

There are other methods of source reduction, such

as purchasing items that are used but still in good condition, and donating items to thrift stores or selling them directly to others through yard sales or flea markets when you are finished with them.

By purchasing and selling used items, you are reducing the amount of energy spent producing these items and you are keeping them out of the waste stream.

What other ways can you think of to REDUCE the amount of trash that you create?

“Stained” Glass Jars

First, cut the scrap pieces of tissue paper into small pieces and spread out some newspaper or a reusable drop cloth to work over. This craft can get a little messy.

Next, mix 2 parts white glue with 1

part water and stir until well mixed.

Make sure that your glass jar is clean and that the label is removed, and you are ready to begin.

Using a foam brush or paint brush, paint the white glue mix onto a section of your jar. Don’t paint the whole thing at once, or the glue will dry

before you get the tissue paper on.

Next, carefully press the tissue paper scraps onto the white glue. Scraps can overlap to make combinations of colors, to darken an area, or to lighten an area (by adding white).

Once you have covered the first section, brush

“Stained” Glass Jars Continued....



A “stained” glass jar becomes a beautiful vase filled with paper roses.

another section with the glue mix and continue placing tissue paper scraps on the jar.

Once you have completely covered the jar in tissue paper, carefully brush a top coat of the white glue

mixture across the entire jar. Set it aside to dry, and then enjoy your beautiful “stained glass” creation as a votive holder for a tea light candle or LED light or as a unique storage container.

Variation:

Instead of using a glass jar, you can use the same procedure to create a tissue paper mosaic on a clean plastic bottle.

Cut a slit in the top of the bottle when you are finished to create a beautiful custom made “piggy bank” to save your change.

What other ways can you think of to use your “stained glass” creation?



Did you take the challenge?

We want to see what you

made! Email pictures to

connections@greenvillesc.gov.

Make sure to put “Green craft challenge” in the subject line.



Challenge

Did you know that glass never breaks down in a landfill? Scientists are unsure how long it would take a glass bottle to decompose in nature, but estimates range from 4000 to a million years, so there’s no question that your glass bottle is going to be around for a long time!

The good news is that glass can be recycled endlessly with no loss of quality or strength, and using recycled glass (known as “cullet”) to

make new products saves energy and raw materials. According to the Glass Packaging Institute, recycling a single glass bottle saves enough energy to power a computer for 30 minutes.

Glass is also infinitely reusable. Until glass breaks, it makes beautiful decorations, long lasting food service items, and great storage containers. The addition of a little colorful tissue paper and white glue turns an old glass jar into

something beautiful.

Read *Something Beautiful* by Sharon Dennis Wyeth, available in the children’s section of your local library and think about how important it is to keep our spaces clean and to do good things for others. Then, make a beautiful reusable “stained” glass jar for someone special in your life.



When you give your gift, try making your own wrapping paper out of recycled materials to make it even more special!

We Must Recycle “E-Waste”



I made an awesome owl out of my leftover VHS tape. What did you do with yours?

MATERIALS NEEDED:

Cereal box

VHS tape

Scissors

Scrap yarn or string

*Colored duct tape or

white glue and scrap

magazine paper

What is e-waste?

“E-waste” is short for “electronic waste” and includes computers, televisions, tablets, cell phones, printers, and other electronic devices and associated parts such as mice and keyboards.

E-waste is one of the fastest growing waste streams in the US and is a special challenge because many electronic devices include compounds such as lead, nickel, cadmium, and mercury that can be hazardous to human health and the environment.

Furthermore, much of what gets discarded as

“e-waste” isn’t really waste at all, but valuable parts and components that could be harvested for reuse, resell, or recycling. In 2010, South Carolina passed laws regulating the disposal of e-waste.

As of 2011, manufacturers of TVs, computers, and printers must provide recovery programs for the items that they create. The laws also made it illegal for a resident to place a computer, monitor, television, or printer in a waste stream that goes to a landfill.

To find out where you can recycle electronics in your county, visit SC Department of Health

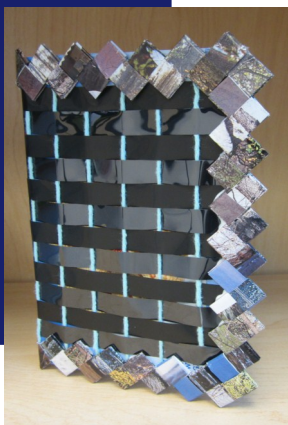
and Environmental Control’s website. www.scdhec.gov/environment/lwm/recycle/counties.htm

South Carolina isn’t the only state that has created laws governing the disposal of e-waste. According to the US EPA, as of 2011, 25 states had passed legislation regulating e-waste.

There are many good reasons for recycling e-waste, just as there are many good reasons for recycling any kind of waste. In addition to keeping items out of landfills, recycling reduces the amount of energy used to make products, conserves natural resources, and reduces emissions from harvesting and mining activities.

VHS tape Notebook Covers

VHS tape notebook cover with a folded paper chain (page 25) border made out of magazine pages



1. Carefully take apart the cereal box.

2. Decide what size you want your notebook cover to be and cut the opened cereal box so

that it is the correct size.

3. Using a ruler, on the long side of the cereal box, mark every half inch on the top and bottom of the box so that your strings will be

even. (You will cover these marks later)

4. Cut a small slit at each half inch mark. It is important to make the slits even.

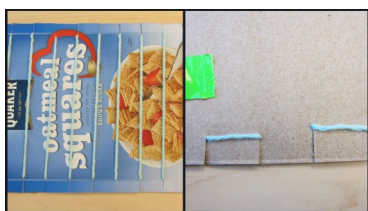
5. Run a long piece of yarn or string through each slit and

VHS tape notebook covers continued....



A J W
Librarian,
Amanda
Leblanc, helps
a student start
weaving her
VHS tape
notebook
cover.

across to the matching slit on the opposite side, behind the box, and across again until your box looks like this:



6. Now you are ready to weave. Starting at the top of the box, weave a strip of VHS tape over

and under each piece of yarn.

7. When you reach the end of the box, cut the tape and begin a new row, alternating starting above and below the first piece of yarn.
8. Push the second line of tape so that it is touching the first, and trim the end.
9. Continue weaving,

following steps 6-8 until you have covered the box.

10. Using a piece of duct tape, carefully tape along each edge, folding the tape over onto the backside of the cardboard.
11. Decorate the inside and create a "pocket" from another cereal box piece taped to the inside of your notebook cover.

Variation:

Instead of duct tape, use white glue and scrap pieces of cloth or magazine pages to finish the edges of your notebook cover.

Can you think of any other cool ways to personalize your notebook with reused materials?

★ Challenge

Let's do some research!

In South Carolina, it is illegal to throw computers in the trash can. The City of Greenville provides special e-waste recycling events twice a year. www.greenvillesc.gov/publicworks/RecyclingSpecialEvents.aspx

For your e-waste challenge, try to find the answers to the following questions:

- 1) What other items are illegal to throw in the landfill in your state?
- 2) Does your community provide curbside recycling pick-up? If so, what can you recycle in your curbside bin? If not, where is the closest place to your home where you can drop off recycling?
- 3) What other items can you recycle that can't be put into curbside bins (such as e-waste)? Where can you take these items to be recycled?





Close the Loop!

Everyone knows the recycling symbol, three arrows chasing each other to form a loop, but fewer people know what it means.

Each of the three arrows in the recycling symbol stands for a part of the recycling process. The first arrow stands for “collection;” when you place your item in the curbside bin or take it to the recycling center, and it is taken away.

The second arrow in the

recycling symbol stands for “manufacturing;” when the recycled materials are made into new products and shipped to stores to be resold.

The last, and most often neglected, arrow in the recycling symbol stands for “purchase;” where the consumer (you) buys the recycled product. This is where the phrase “close the loop” comes from. In order to make recycling more profitable, and thus

more desirable, it is important to buy products made from recycled materials.

How can you tell which products are made from recycled materials? Read the product. Usually, somewhere on the label, a product will tell you if it is made from recycled materials. Don’t just look for the arrows, they may mean that the product is recyclable, but they don’t mean that the product is made from recycled materials.

MATERIALS NEEDED:

Clean Containers

(shoe boxes, glass jars, plastic jars, coffee cans, etc.)

Glue

Paper

Decorations

Spectacular Storage Containers

Storage containers are a great way to organize your stuff. You can purchase them, or you can make your own by reusing boxes, cans, and jars. Most of the things we buy come in some sort of container. Instead of throwing them out, give them new life as spectacular, custom made

storage containers.

1. Gather containers and make sure they are clean. Remove any labels and wash and dry any plastic or glass containers that had food in them.
2. Choose the paper that you will use to cover the containers. Make sure that your paper is long enough to wrap around the container. Don’t worry if it is too long.

You can trim it later.

Some ideas: reuse wrapping paper that was on a gift that you were given, magazine pages, comic pages from the newspaper, or paint some designs on the back side of used printer paper for a super custom look.

3. Cover the containers. Place a line of glue from the top to the

Baby food jars make cute pencil cups.



Spectacular Storage Containers Continued....



Boxes, glass jars, coffee containers...any clean container can have new life with a little bit of creativity!

Scraps of fabric, paper chains (see page 25), flowers, buttons, and bows all make great decorations. What other “trash” materials can you find to decorate your storage containers?



bottom of the container and press the paper onto the glue.

4. Wrap the paper around the container, add another line of glue about halfway around, and then a line of glue at
- the end of the paper.
5. Once the paper is glued to the container and dried, trim the top or bottom if you need to, and decorate your new storage containers.



Challenge

Containers for storage can be purchased almost anywhere, but why buy them? Containers are a part of our daily lives. Almost everything we purchase comes in a container of some sort.

A set of storage containers may be most useful if they come in a variety of shapes and sizes so that you can store lots of different things in them.

Your storage container challenge is a container

scavenger hunt. Starting in the kitchen pantry, how many different types of containers can you find?

1. Can you find five containers that you would consider large and five containers that you would consider small?
2. Can you find containers in five different shapes?
3. Can you find five containers made from different materials?

A great way to significantly reduce your impact on the waste stream is through the packaging that you buy. The next time you are in the grocery store, think about how much packaging you are purchasing along with your food. Are there ways to buy the same foods but less packaging?

Check out the green craft tutorial videos online
www.youtube.com/user/AJWLibrary



Packaging comes in all shapes, sizes, and materials. Are some packages better than others?

More Than A Garbage Patch



MATERIALS NEEDED:

Plastic bottle w/ cap
Decorative "debris"
(such as beads, pieces of colored plastic, can tabs, foil, etc.)
Water
Light colored cooking oil
Blue food coloring
Glue
Funnel

There is a saying that "all rivers lead to the ocean." The corollary to this is that all things that end up in rivers, eventually end up in the ocean. When it rains, litter on the ground gets washed into storm drains and directly to rivers. Since most plastic floats, it flows quickly to the ocean.

The Great Pacific Garbage patch is well known due to press coverage, but there are many other areas where our trash accumulates in the ocean, and much of that trash is plastic.

Plastic debris is a major problem in marine ecosystems. Unlike paper and food waste, plastic doesn't

biodegrade (break down by microbes), but instead it photodegrades. Photodegradation means that sunlight causes the plastic to break down into smaller pieces. Eventually, the pieces become so small that we can no longer see them, but they are still there. These small pieces of plastic cause a lot of problems!

Fish, sea birds, and other marine animals eat these small pieces of plastic. The plastic can directly harm animals by causing them to starve or causing physical problems such as lacerations to the digestive system when eaten. Another concern is that plastic absorbs

high levels of pollutants from the surrounding water. When eaten, these chemicals (such as PCBs) enter the animal and the food chain.

In addition to ingestion, animals are also harmed by marine debris because they can get tangled up in it and drown.

Though the exact amount of trash in the ocean and number of animals affected by it is unknown, what is known is that our trash doesn't belong in the ocean!

There are easy ways to do your part to prevent trash in the oceans: don't litter, reduce your impact on the waste stream, and recycle.

Oceans in a Bottle

**Making
oceans in a
bottle at
A J W**



Have fun gathering and testing materials for your ocean in a bottle, and then keep it around as a reminder to help protect our oceans!

First, gather your materials. You will need a clean bottle, water, food coloring, light colored cooking oil, and decorations. The decorations should be made out of trash. The bottle pictured on the

next page used beads from a broken plastic necklace, cut up pieces of aluminum foil, and pieces of plastic cut from a detergent bottle.

Then, test your materials. Ideally, your ocean in a bottle will

Ocean in a Bottle Continued....



The waves are relaxing to watch, and the bottle serves as a reminder to protect our oceans.

have items in it that sink, some that float in the water, and some that float on top of the water. (See the Challenge section, below)

Once you know what is going into your ocean in a bottle, you are ready to make it.

1. Fill your bottle about 2/3 of the way full with water.
2. Add a few drops of blue food coloring and mix it until the water is the color you like.
3. Add your decorations.

4. Use a funnel and slowly pour the cooking oil into the bottle until it is full.
5. Place a ring of glue around the top of the bottle and cap tightly. Once the glue is dry, enjoy your ocean waves by gently rocking the bottle back and forth.



Students at A J Whittenberg show off their plastic bottle oceans.

Protect the oceans by saying “NO” to plastic water bottles. Instead, use a water filter and drink from a reusable container.



Challenge

Let's put on our chemistry hats!

The reason that we can make oceans in a bottle with oil and water is that oil and water don't mix. That is due to the molecular structure of the two different liquids.

You also should notice that the colored water sinks to the bottom of the bottle while the oil stays on top. This is due to the fact that water is denser than oil.

Using a large drinking glass full of water, let's test the

density of the items you have gathered to decorate your ocean.

In order to test the density of an item, place it gently on the surface of the water. If the item is more dense than water, it will sink. If it is less dense, it will float.

Take two small pieces of foil. Keep one flat and ball the other up. Place both on the surface of the water, and see what happens.

What do you think would happen if you added salt to

the water (in order to make a salt water solution, you must first heat the water and then stir the salt in)? Would the items sink or float differently than they did in the plain water?

What would happen if you heated the water up?

Experiment to find objects of various densities to go in your ocean in a bottle.



Marine animals, like this sea turtle, don't want to live in a world full of plastic!



Scoop the Poop!

When people think of water pollution, they often think of factories pumping sludge directly into rivers. While industrial water pollution is still a problem in many areas, the Clean Water Act legislation, passed in 1972, regulates the discharge of pollutants into US waterways.

Now, the major pollution entering streams and rivers in the US is known as nonpoint source pollution. Nonpoint source pollution includes litter, sediment, oil, pesticides, and other chemicals that are washed into water bodies by rain.

ground can be washed into the water by rain, and that includes animal waste. Pet waste can be a big cause of water pollution, especially in urban areas where storm water washes it into storm drains.

Many people think that storm drains carry water to a water treatment plant, but that isn't true. Anything in a storm drain goes directly into the river.

Animal waste introduces bacteria and nutrients into a water body. Some nutrients are essential for aquatic life, but too many nutrients become a major problem.

Excessive nutrients in aquatic systems cause algae to grow, making the water cloudy and blocking the sunlight from reaching plants and animals below the surface. Then, when the algae and the plants without sunlight die, oxygen in the water gets used up by decomposers, creating an oxygen poor, or anoxic, environment that can kill fish and other aquatic organisms.

Help protect water quality by picking up or burying pet waste and making sure that it doesn't wash into the water.

Anything on top of the

MATERIALS NEEDED:

Old t-shirts

Scissors

Masking tape

*Optional — sewing machine

Community Center students braided t-shirt strips into dog toys, like this one, for shelter dogs.



Dog Toys from old T-shirts

First, gather a few old t-shirts. The shirts can have some holes in them, but they should be washed before you start.

Lay the shirts out flat.

Cut along the bottom of the shirt just above the seam to remove

the seam.

Then, starting about an inch above the bottom, cut a strip of t-shirt.

Continue cutting strips until you reach the bottom of the arms.

Set the top of the shirt and the seam aside for later, and cut each resulting loop in half twice to make 2 strips.

Braid 3 strips of t-shirt

together, using a small piece of masking tape to secure one edge and set the braid aside.

Make 3 braids.

Tie the ends of the 3 braids without tape in a knot and then braid them together.

Remove the masking tape from the remaining end, and tie a final knot, pulling the toy tight.

Cat Toys from Old T-shirts



A student at AJW ties the end of a cat toy made out of an old t-shirt.

Using the leftover top part of the t-shirt, cut a large rectangle of fabric and a thin strip like the ones used for the dog toy (this will become the handle for the cat toy).

Fold the fabric in half length wise so that the logo is facing in and the strip of fabric is also on the inside.

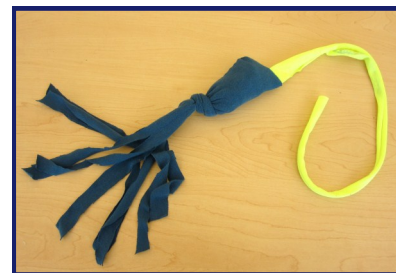
Either by hand or using a sewing machine, sew across

one short edge, including the top of the long strip of fabric and a little more than halfway down the long edge.

Once you are finished sewing, turn the fabric inside out. Using leftover bits of t-shirt, stuff the sewn end of the cat toy (You may even want to add a little cat nip). Next, tie a knot, closing the toy at the point where the

sewn edge stops.

There should be a section of t-shirt hanging from the knot. Use the scissors to cut this into strips that will dangle from the body of the cat toy.



Variation

For a “no sew” toy, cut a large circle or square from the t-shirt. Place pieces of leftover t-shirt (stuffing) in the center of the large piece, and gather the edges.

Using a leftover strip, wrap it around the piece a few times and tie it tight. Finally, use the scissors to shred the dangling edges.

Don't have a dog or cat? Make some pet toys to donate to a local no-kill shelter for animals that don't have a family of their own.

★ Challenge

One of the biggest challenges in “green” crafting is making sure that we use all of an object.

In recycling our old t-shirts into cat and dog toys, most of the body of the shirt below the arms becomes strips for the dog toy braids and the handle of the cat toy.

Some of the leftover will be used to stuff the cat toy, but

there is bound to be a little more fabric than you need to make these toys.

What can we do with it?

Fabric can't go in curbside recycling bins, but there are textile companies that will accept fabric for recycling. Recycled fabric becomes insulation, paper, rags, car seat stuffing, upholstery, and much more.

For your t-shirt challenge, come up with something unique and interesting to do with your leftover t-shirt pieces. Make sure to use it all so that nothing is thrown in the trash!



What is Polystyrene?



MATERIALS NEEDED:

Clean egg carton

Scissors

Glue

Paint

Old paper clips

String

Polystyrene is a hard plastic that is expensive and everywhere.

Polystyrene is used to make everything from hard plastic cases (such as the outside of your computer) to plastic tubs, take out food cartons, and packing materials.

The next time you have a plastic tub from yogurt, margarine, or a hard plastic toy or container, look for the little recycling symbol and see what number is in the inside of the arrows. That symbol does not mean that the item can be recycled, but it will tell you what type of plastic it is made of. If that number is a 6, then

you are holding polystyrene, and that plastic is not recyclable here in Greenville.

According to the EPA, in 2010, only 8 percent of the plastic waste created in the US was recycled. Polystyrene is recyclable, but is often not accepted for recycling for a variety of reasons, usually lack of equipment or cost effectiveness.

Expanded polystyrene (EPS) is a very common packaging material. Like other plastics, polystyrene does not biodegrade. EPS is very light and easily blown by the wind. It also floats. As marine debris, polystyrene is a major

problem. It

also takes up lots of space in landfills.

What can you do about polystyrene?

One possibility is to choose not to purchase polystyrene products. Choose reusable glass, metal, or paper products instead.

If you don't have any choice (such as packing materials) in the purchase, there are companies that will accept polystyrene for recycling, you just may have to do a little research to find one in your area, or pack up your polystyrene and ship it to a recycler.

Egg Crate Cup Fish

Egg crates are a great example of choice—you can choose to buy polystyrene or cardboard egg crates. Polystyrene egg crates can be returned to many grocery stores for reuse. Cardboard

egg crates can be composted, recycled, or reused. OR turned into fish decorations.

1. Cut out three egg cups.
2. Use the scissors to make 8 slits evenly around the edge of

the first egg cup.

3. Use your fingers to spread out the slits.



Egg Crate Cup Fish Continued....



Red and orange striped egg crate fish.

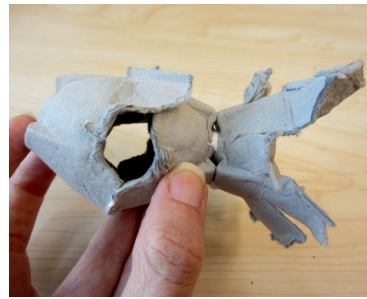
This will form the tail of the fish.

4. Glue the second egg cup base to the base of the egg cup with the slits so



that both cups are facing outward.

5. Position the last egg cup and place a line of glue around the edge that will touch the second egg cup.
6. Press the third egg cup into position on the second and let the glue dry. This will form the



fish's head.

7. Add any extra pieces of cardboard as fins or whiskers.
8. Paint your fish. Begin with a base color and then paint stripes, spots, eyes, and other features. Be creative!
9. Make a hole in the top of the body of the fish and hang it on a string or an old paper clip.

Can you think of any other things that you can make with egg crate cups?



Challenge

Create a color fade.

Chose the two colors that you want to fade. The colors need to be next to each other on the color spectrum (Purple and red, Green and Yellow, etc.) or they can be a lighter and darker shade of the same color.

Place a large blob of the first color of paint on your pallet. A piece of old cardboard makes a great paint pallet.

Paint a few lines of your first color.

Add a drop of the second color to your paint pallet and mix it with the first color well. Paint a line or two with the newly mixed paint, making sure to overlap with the first color.

Continue adding a drop or two of the second color at a time and painting a few lines. Eventually, the first

color will fade completely into the second, or you will run out of paint.

Try painting a fish or two that fade from one color to another.

Try using white or black to fade any color into darker or lighter versions of itself.



Dark to light blue fade on an egg crate cup fish.

**MATERIALS NEEDED:**

Candy molds (or muffin tins with liners, ice cube trays, sea shells, or other flexible heavy plastic containers)
Old crayons
Glass containers
Microwave
Pot holder

Be very careful pouring the hot wax into the molds.



Defining Recycled

Often, the term recycled is used interchangeably with the term reused. This is technically correct (using something again is a way to recycle it), but can cause some confusion.

Anytime something is turned into something else or used in a new way, that item is being recycled. The industrial recycling process, though is a little more complicated than just taking a glass pickle jar, putting new pickles in it, and placing it back on the shelf.

When items are picked up for recycling, they

first have to be sorted by material type. The sorting process is important because some items, if included, can ruin or degrade an entire load of recycled materials (such as mirror glass with glass or greasy pizza boxes with paper).

After sorting, the recycled materials are sent off to manufacturing plants where they are broken down and made into new items.

Recycled paper is mixed with water and “pulped” in a machine that acts like a large blender before running it

through different processes to remove dyes, inks, metal, and other contaminants.

Glass is crushed into “cullet” which is mixed with sand, soda ash, and limestone to make new glass. Using cullet to make new glass is cheaper than using raw materials, and it takes less energy.

Each recycling system is different, but all recycling systems help conserve natural resources and reduce the amount of waste that is thrown into the landfill.

“New” Crayons

*This craft requires adult help and supervision.

1. Gather your old or broken crayons. Remove all of the paper wrappers and set aside.
2. Sort the crayons by color.
3. Break one color of crayons

into smaller pieces into a glass jar until you have about half an inch of crayon pieces on the bottom of the jar.

4. *Adult* - microwave the glass jar, stirring regularly, until the crayons have melted. (The time will vary. You can also use a hot water bath or

double boiler to do this on the stove. Be careful.)

5. *Adult* - using pot holders, carefully remove the glass jar from the microwave and pour the melted crayons into the molds.
6. Set the molds aside or place them in the

“New” Crayons Continued....



“New” crayons recycled from old crayons

refrigerator so that they can cool.

- Once the crayon wax has hardened, remove the new crayons from the mold.

Variation:

Using an old baking sheet with sides, crumble the

crayons onto the baking sheet until it is covered with a layer of crayon about a 1/4 inch thick. Bake this in the oven until the crayons have melted together. Remove the tray from the oven and allow it to cool slightly but not completely. Use a cookie cutter to cut crayons from the sheet.

Variation

No Bake:

Crumble crayons into a seashell or other hard container and set it outside in the sun. The sun will slowly melt the pieces together to make a new crayon.

Try combining chunks of a few different colors for a cool multi-colored look.

How long did it take for the sun to melt your crayon?

Here's another challenge: come up with something unique to do with the discarded wrappers from your old crayons!



Challenge

Not so little....

Often we throw small things in the trash, thinking that it won't make much of a difference, since what we're throwing away is so small.

At the end of the 2011-2012 school year, we collected more than 30 pounds of used crayons from classrooms that were going to be thrown in the trash. A single crayon may be small, but when a lot of them are

thrown away, something small quickly becomes something large. Imagine how many crayons get thrown in the landfill each year if every school throws away more than 30 pounds!

Your challenge is to rescue something small from the trash.

Find a small item that is going to be thrown away and come up with something to

turn it into, or a way to use it again so that it doesn't get thrown in the trash can.

Remember, one little thing may not seem like a lot, but little things add up. Every small action can make a big difference!



A two-color crayon made by pouring blue into the mold, letting it harden, and then pouring yellow into the mold.



Compost

Most of our trash doesn't have to be trash! According to the EPA, 27% of the waste that people in the US created in 2010 was yard and food waste, much of which can be composted.

Composting helps save space in landfills and creates a product that provides important nutrients for plants.

Rather than buying expensive fertilizers, mulches, and soil amendments, composting is an easy way to save money and have a beautiful, productive yard while helping protect the environment.

Making your own compost pile is easy.

Start by choosing a dry shady spot near a source of water and then add your green and brown materials as you gather them. Try to have an even amount of brown to green compost materials, and alternate layers.

Bury food waste a few inches underneath browns to discourage pests. You may even want to build a short enclosure to contain your compost pile. Bricks, wood, or metal fencing can be used to keep the compost in and keep critters out.

Moisten the pile slightly when you add dry materials. Compost should be damp, but not soaking wet.

Compost breaks down best when it is between 120 and 160 degrees F. In order to help keep your compost pile working, shred and chop your waste materials into small pieces, collect materials for a few days and add in bulk rather than bit by bit, and finally, turn your compost pile with a spade or pitchfork once every few weeks.

What can go in the compost pile?

Vegetables, fruits, grass clippings, leaves, fire place ash, pet hair (and your hair), shredded cardboard, brown paper, dryer lint, tea bags, coffee grounds, and other organic materials. No meat or dairy.

MATERIALS NEEDED:

Cardboard in all shapes and sizes

Scissors

Glue

Markers or Paint

Cardboard "Castles"

Cardboard is a wonderful material to make things with. It is recyclable, and as long as it's just brown (with no waxy colorful pictures) it can also

be shredded and composted.

This craft depends completely on your creativity.

First, gather a variety of cardboard boxes,

cardboard paper rolls, and other pieces of cardboard.

Next, plan your castle. Cardboard castles can be large or small, with 2-dimensional and 3-dimensional parts. Every



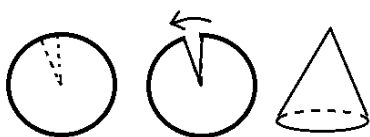
Cardboard castles continued....



A cardboard castle with drawbridge and toilet paper roll towers.

castle will be different, but here are some techniques you might want to use to help you make your castle.

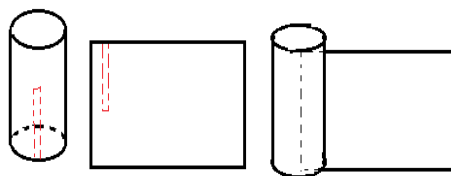
- Make a cone:



Cut a circle from lightweight cardboard (cereal box). Mark the center of the circle and cut a small "pie" piece from the circle. Fold one edge of

the circle over the other to make a cone. Continue folding until the cone base is the width you want. Tape or glue the cone shut.

- Add a tower:



Cut a slit in the paper towel roll from the bottom to about halfway up the roll. Cut a matching slit in the

cardboard wall where the tower will attach from the top about halfway down. Place the paper towel roll over the slit in the edge of the wall. Place a line of glue on the base cardboard from the bottom to the top on the inside edge of the slit and press the edge of the tube to the glue.

Place towers on the corners: Hold the paper towel roll above the corner and use a pencil to make 2 marks on both the roll and the box

where the tower will go. Then cut slits in the roll and box, as before, but in two places.

For a compost pile to work most efficiently, you need a mix of "Green" items, such as vegetable scraps and grass clippings and "Browns" like dead leaves and cardboard.

★ Challenge

More than just fun:

Cardboard castles can be hours of fun—gathering cardboard in all shapes and sizes, planning, cutting, building, and finally, decorating the castles.

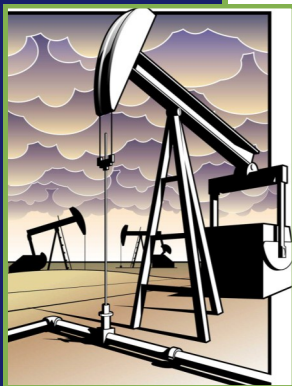
Cardboard houses can also

be useful and decorative. Cut out some windows and feed a string of LED Christmas lights through the castle to make a cool lamp, or size the castle for a favorite set of dolls and create an eco-friendly and unique doll house.

What other useful things can you create with cardboard?

Don't forget to take any scraps that are left over and put them in the recycling or in the compost!



**MATERIALS NEEDED:**

**Steel can (from soup or
canned food)**

Broad headed nail

Hammer

Paper

Pencil or pen

Tape

Water

Nonrenewable Resources

The term “resource conservation” can be found throughout this booklet. Recycling, reuse, reselling, buying used materials, repair, and source reduction are all ways to both reduce our impact on the waste stream and conserve natural resources.

One of the reasons that resource conservation is so important is that many of the items that we use on a daily basis come from nonrenewable resources.

So, what is a nonrenewable resource?

Natural resources are anything that we use that comes from nature. Nonrenewable resources are natural resources

that do not replenish themselves in a timely manner, sometimes defined as a human lifetime.

Thus, rocks, metals, and oil are all nonrenewable resources. The list of nonrenewable resources includes many of the things we use as traditional sources of energy, such as coal, natural gas, and oil.

Once we use up a nonrenewable resource, there won't be any more of it available in our lifetimes (and in most cases, our great-great-grandchildren's lifetimes).

Luckily many items made from nonrenewable resources are recyclable.

Many plastics, components from electronics, aluminum cans, and other metals can all be recycled. When we recycle, repair, or reuse items made from nonrenewable resources, we also conserve these resources, making sure that they will be available for future generations.

Finally, since mining and manufacturing items from virgin materials often uses more energy than recycling and manufacturing with recycled materials does, waste reduction also conserves nonrenewable resources that are used to produce energy.

“Soup” Can Lights



1. Wash your steel can and remove the label.

2. Take a piece of paper and wrap it around the can. Trim the paper so that it fits around the

can and overlaps less than an inch. You will draw your design on this paper.

3. Fill the can with water and place it in the freezer. Once it is frozen, you will be able to hammer a

nail into the can without bending or denting it.

4. Take your piece of paper that fits the can and draw a design on it. Large, bold designs will be easier to see than

“Soup” Can Lights Continued....



Can you see the dragonfly glowing on the soup can?

small details.

5. Place dots on the outline of your design so that it looks like a finished version of “connect the dots.”
6. Once the water in the can is frozen, remove it from the freezer and wrap the design paper around the can, tape the paper to itself so that it is wrapped tight to the can.

7. *This step requires adult supervision and safety glasses: Using a broad headed nail and a hammer, gently hammer the nail into the dots so that you pierce the can. You don’t have to hammer very hard. Make sure to wear your safety glasses.

*As you work, the ice will melt. You may have to refreeze the can, and work over a towel.

When you have finished hammering all of the dots, let the ice thaw over a bowl. Use that water to water plants or for a pet. When the ice is melted and the can is dry, place a candle or LED light inside the can.

If you want, you can paint the outside of the can a dark color so that the light shows up even more.

Variation:

To make a hanging votive, hammer two holes near the top of the can and string a piece of wire or chain through the holes.

Make a few of these and then fill the cans with LED Christmas lights for a cool hanging light garland.

The steel manufacturing industry in the US requires recycled steel to make new steel. All steel products (like your soup can) contain anywhere from 25 to 100% recycled materials.



Challenge

Metals share a variety of properties including a high density, a shiny surface, and the ability to conduct heat and electricity. Some metals are also magnetic.

For this challenge, perform a metal scavenger hunt in your kitchen. Try to find 10 different metal items.

Once you have the ten items, line them up in a row. Now try and guess whether they will be attracted to a magnet or not. Using a refrigerator magnet, test out your theory.

How close do you have to get to each material before the magnet is attracted? Try

putting the materials in order from the most to the least magnetic. Why do you think some items are more attractive to the magnet than others?



But what about Renewable Resources?



MATERIALS NEEDED:

Thin cardboard,
cardstock, or heavy
paper
Scissors
Pencil or marker
Glue

If nonrenewable resources won't re-form in our lifetimes, it is clear why we need to conserve them. If we use up all of our nonrenewable resources, then there won't be any more. But, what about renewable resources?

By definition, a renewable resource will be replenished in a timely manner so that we can harvest it again. Plants and animals are considered renewable resources. As such, cloth made from cotton and wool as well as paper made from trees are renewable resources. So, why should we conserve them?

It is true that renewable

resources do grow back, but that is not the end of the story. Harvesting renewable resources takes a considerable amount of energy (often energy harnessed from nonrenewable resources), and manufacturing with virgin materials usually takes more energy than manufacturing with recycled materials, even if those materials are renewable.

Also, harvesting has a wide range of impacts on the environment. Soil compaction and erosion, habitat destruction, and water pollution can all result from traditional harvesting methods such as clear cutting trees. Over harvesting can have

detrimental effects on the environment and the food chain of an entire ecosystem, as can be seen in the decline of many fish species.

Also, even though a plant or animal may be a renewable resource, how renewable it is depends on a variety of factors, such as how many offspring each adult produces and how long the lifespan of the plant or animal is.

So, even though a resource such as a pine tree can grow within the lifespan of a human being, recycling, reusing, and conserving these renewable resources helps protect our environment.

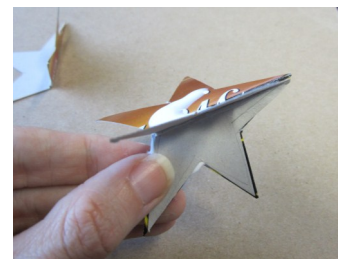
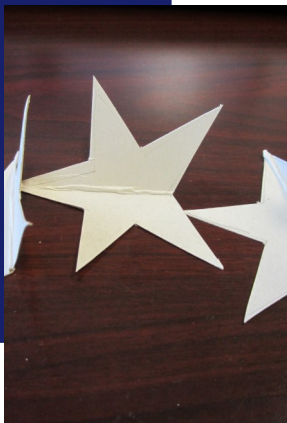
3-D Paper Ornaments

1. Choose a shape that is symmetrical. (Heart, circle, house, star, etc.)
2. Create a template by folding the paper board in half and tracing one side of the shape with the center axis on the fold.
3. Cut out the first shape, unfold it, and trace 5 or six copies of the same shape onto heavy paper, card stock, or lightweight cardboard such as a cereal box.
4. Cut out the templates and fold

each shape along the center line.

5. While the shapes are folded, glue the outsides together

Five pointed stars cut from a granola bar box.



3-D paper ornaments continued....

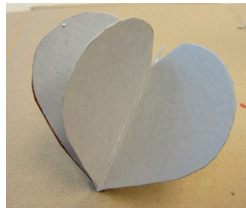


**A 3-D heart
made from a
cereal box.**

and allow the folded stack to dry.

6. Once the stack of cardboard shapes is dry, unfold it and glue the remaining back edges

together to create a 3-dimensional ornament.



7. Decorate your ornament with paint, glue and glitter, markers, or crayons.
8. Punch a small hole in the edge of one of the sides and using string or an old paper clip, make a hanger for your ornament.

How many different symmetrical shapes can you come up with?

In March 2012, the Guinness World Record gum paper chain was 75, 245 feet long and contained 1, 688,930 gum wrappers.



Challenge

One of the most important things about “green” crafting is making sure that nothing is left over to go in the trash.

Paper is something that we all have a lot of. Heavy paper makes great ornaments, but what can we do with lightweight paper like magazines and junk mail? Make a paper chain!

1. Cut the leftover pieces into rectangles 2.5cm wide by 2.7cm long.
2. Fold the strips in half on the long side and crease.
3. Fold the strips in half on

the short side and crease.

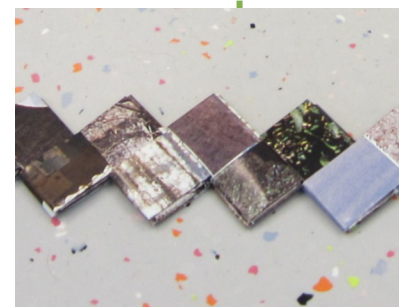
4. Fold each half inwards in half again and crease so that you have a “V” shaped piece.
5. Insert the ends of one “V” into the slots formed by another.
6. Continue weaving the “V” pieces together to form a chain.

***Tip:** it’s easier to weave if you keep the open edges facing away from the previous woven strip so that you are always weaving into

the folded edge.

Paper chains make beautiful borders and decorative strips, and they don’t have to be made out of paper. Try making these woven chains with gum wrappers, strips cut from chip bags, or other materials.

Do you have any more leftover pieces? What can you think of to do with those?



A paper chain made from strips of old magazine pages.



Repair broken items instead of buying new

MATERIALS NEEDED:

Plastic Bottle (2L Soda

Bottles work well)

Scissors

Masking tape

Permanent markers

String

Heavy cardboard

Utility knife

Source Reduction at Home

Now that you've discussed and explored some of the many topics related to Municipal Solid Waste, maybe you're wondering what else you can do to reduce your impact on the waste stream. Here are a few ideas to get you started.

- Make a plan: when you're going shopping for groceries or other household items, make a list ahead of time and stick to it. That way you won't buy extra things that you don't really need.
- Buy used: donating to and shopping at thrift stores, yard sales, and
- consignment shops reduces resource consumption on the manufacturing end and keeps items out of the waste stream.
- Only buy what you need.
- Repair broken items when you can.
- Purchase things that will last instead of one-use items, and take good care of the things that you have so that you won't need to buy more.
- Ask yourself "what do I have?" instead of "what do I want?" Often, something that you already own may do the trick.

- Make more sustainable choices. Using a throw away dust rag or a one use plastic fork may be habit, but do you really need to? Would a reusable dust rag (maybe one made from an old t-shirt) and a reusable metal fork be a better option?
- Be creative—hopefully this booklet has given you a few ideas about how you can reuse and repurpose some common trash items into new and interesting things, but this is only a beginning. What other cool things can you do with your "trash?"

Plastic Bottle Sun-catchers

First, rinse out the plastic bottle and remove the label. With help from an adult, carefully make a slit near the top of the bottle with the utility knife. Using the scissors, cut in a circle around the top of the bottle until the top section comes off.

The resulting "funnel" can be set aside.

Cut a slit down the bottle until you reach the base, then turn the scissors and cut the base off. Set the base aside with the top. You should now have a single sheet of curved plastic. This is the piece you will use for

your sun-catchers.

Draw your design on a piece of heavy cardboard or print a picture out and tape it to the cardboard.

Use the scissors to cut a rectangular piece of plastic bottle a little larger than your design.

Tape the piece of plastic onto the cardboard on



Plastic bottle sun-catchers continued....



Plastic bottle butterfly hanging in a window.

top of the design that you have chosen. The plastic bottle is curved, so it may not sit flat on the cardboard. That is ok.

Using permanent markers, first draw on the colors that you want your design to be. Once you have finished with

the colors, use the black permanent marker to draw



the outlines of your design.

Cut the design out of the plastic.

Carefully use the utility knife to make a hole in the plastic and thread some string through the hole to hang your sun-catcher where it will catch the light.

If you have any small pieces of plastic left over, save them and put them inside another plastic bottle that is going into the recycling bin.

Color in the leftover bottom of the bottle to make a beautiful flower. What else can you do with the top?



Plastic bottle sun-catchers make awesome mobiles.

★ Challenge

Clear plastic bottles make a great base for sun-catchers because they are transparent and allow light to pass through them clearly.

When considering how light passes through a substance, that substance can be considered transparent, translucent, or opaque. Something that is translucent allows light to pass through, but not clearly. Something that is opaque does not allow light to pass through at all.

Using your permanent markers and a leftover piece of plastic bottle, draw five different large blocks of color (make sure one block is black). Then, hold the plastic up to a window or light to see whether any light comes through each color.

If you can clearly see images through the color, it is transparent. If you can see images, but they aren't clear, then the color is translucent. If you can't see through the color, it is opaque.

Use what you learned to make a sun-catcher that has colors that are opaque, translucent, and transparent.

Can you layer two pieces of plastic with different colors? What happens then?



A fish sun-catcher made from a plastic bottle.



City of Greenville

206 S Main St

Greenville, SC 29601

E-mail: connections@greenvillesc.gov

The Connections for Sustainability Project is a three year planning project undertaken by the City of Greenville. The project aims to improve the livability of the City and engage City citizens in the development of a more sustainable urban environment. The Livability Educator is part of the Connections for Sustainability project, and is dedicated to engaging individuals of all ages in contemplation of their connections with the built, natural, and social environments. To learn more about the project, visit our website connections.greenvillesc.gov

Did You Take the Challenge?

Were you inspired by the Green Craft Challenge? Did you invent a new craft that you made from something that would otherwise have been thrown in the trash?

If so, we would love to hear about it! Also, your craft could be featured in the next "Green Craft Challenge" booklet.

To submit your craft, email the connections project at connections@greenvillesc.gov. Use the subject heading "green craft challenge" and include the following information:

1. A complete list of materials that you used to make your craft.
2. Detailed step-by-step instructions on how to make your craft (pictures of the process are great too).
3. Pictures of your finished product.
4. Your name.

Please be aware that by submitting a craft idea to the Green Craft Challenge, you are consenting to the publication of your idea in future materials.



A J Whittenberg students hard at work creating crafts from recycled materials.